Stefan Hagel: Calculating Auloi – The Louvre Aulos Scale. Hagel's attempt at extrapolating some scaling out of the Louvre aulós is somehow herculean in ambition. There are far too many approximations, estimations, scribal errors, misinterpretation, probabilities and even the possibility that the instrument object of Hagel's disquisition might not, after all, be an aulós but two separate mónauloi. However, Hagel digs into this mass of inconsistencies and with admirable discrimination manages firstly to reconcile Landel's with his organological rules in that he vowed firstly in finding two finger holes likely to give a certain concordant interval of a fourth, preferably, on the ground that it constitutes the basic interval in Greek scales, secondly in calculating the effective length of the pipe from the distance between these finger holes and the ratio implied by that interval, e.g. the ratio of 4:3 for a fourth, and thirdly to calculate the pitches for the rest of the finger holes from their positions, using the effective length obtained in step 2. Then there was the matter of conciliating mathematics with the iconography, and then mathematics and iconography with literary evidence, mainly with Plato's Laws for the enlightenment of his understanding of heterophonia. There has been a style of heterophonic lyre-music which Plato deprecated. As a conservative philosopher, he is orientated on the classical age before the composers of the New Music deteriorated everything. This 'real' Greek music did not depart from unison. Hagel introduces the Pseudo-Aristotelian Problem 19.9 and the Aristoxenian rhythmical theory, and a passage from Pseudo-Plutarch. From all of this Hagel derives that in the design of an aulós-pair it must have been of primary importance to have concordant finger holes distributed between both pipes. Concords within one pipe would arise merely as a side effect of unisons and distributed concords. Thus it is confirmed that the traditional major assumption for the evaluation of single pipe scales must be met with suspicion. It might well prove even impossible except maybe sometimes on the ground of comparisons with extant pairs. Finally, Hagel agrees with Bélis and West that the Louvre

instruments are indeed to be paired as a single aulós. Hagel developed software in order to undertake his own metrology in respect of a series of parameters which he describes competently and from which he produces a series of graphics and figures which are very convincing despite of an initial infinitesimal likelihood of success. RD